

### Abstract of the Disclosure

The present invention relates to a method for fabricating a capacitor of a semiconductor device. The method includes the steps of: forming a first amorphous silicon layer doped with an impurity in a predetermined first doping concentration suppressing dopants from locally agglomerating; forming an impurity undoped second amorphous silicon layer on the first amorphous silicon layer in an in-situ condition; forming a storage node by patterning the first amorphous silicon layer and the second amorphous silicon layer; forming silicon grains on a surface of the storage node; and doping the impurity to the storage node and the silicon grains until reaching a second predetermined concentration for providing conductivity required by the storage node.